



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,684	10/16/2001	Dong-Gyu Kim	6192.0273.AA	3843

7590 07/12/2004
McGuire Woods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102-4215

EXAMINER

DI GRAZIO, JEANNE A

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary	Application No. 09/977,684	Applicant(s) KIM, DONG-GYU	
	Examiner Jeanne A. Di Grazio	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Election April 29, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,7 and 20-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 8-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,7 and 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

Claims 6-7 and 20-25 are pending. Claims 1-5 and 8-19 are withdrawn from consideration.

Priority

Priority to Korean Patent Application 2001-52829 (August 30, 2001) is claimed.

Election/Restrictions

Applicant's election with traverse of Species B, Figure 4, Claims 6-7 and 20-25 drawn to a method for fabricating a liquid crystal display in the reply filed on April 29, 2004 is acknowledged.

The traversal is on the ground(s) that "the subject matter of all claims is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims." (Response to Election / Restriction Requirement of April 29, 2004).

This is not found persuasive because: (1) a proper search and examination and determination of patentability of elected Species B would not necessarily confirm or refute patentability of the other non-elected Species and (2) the Examiner carefully notes Applicant's statement of a "thorough search" (in the context of any one group of claims) followed by

Art Unit: 2871

“encompass a search for the subject matter of the remaining claims.” Merely because a thorough search may be done for any one group of claims, such a search of the remaining claims may not necessarily encompass a search thorough enough of the remaining claims to confirm or refute patentability thereof.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

Claim 6 is objected to because of the following informalities.

As to claim 6, the limitation “the black matrix” lacks proper antecedent basis as not having been properly introduced into the claim. Because “black matrix” is not given proper antecedent basis, any peripheral portion of any color filter that touches a black matrix will be construed to read on the claim including a black matrix that fills in gaps between color filters.

Appropriate correction is required.

Claims 21 and 24 are objected to because of the following informalities.

As to claims 21 and 24, the Examiner objects to the wording of the claims as being confusing. The claims are confusing because they may be interpreted in at least two different ways. For example, claims 21 and 24 may be read to mean that it is just the first color filter that is over the data line or that the first and second color filters overlap each other and then subsequently they overlap (are over) the data line. Applicant must clarify the nature of overlap of the first and second color filters and with respect to the data line.

For examination purposes, the Examiner reads the claim to mean that a color filter overlaps with a data line.

Appropriate correction is **required**.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent 5,568,293 (to Takao et al.).

As to claim 6, Takao teaches and discloses a liquid crystal display having trapezoidal color filters formed from a low-temperature curing polyamino resin having a photosensitive group (Title, entire patent). Referring to Figures 11A – 11F and ensuing explanation of Figures 11A – 11F, Takao has a blue colored resin material (112) coated onto a substrate then subsequent to the blue colored resin material (112) a green colored pattern is formed (115) partially overlapping with the blue pattern shape colored resin (112) layer and then further a red pattern colored resin layer (116) is formed to partially overlap with the blue pattern colored resin layer (112) and the green pattern colored resin layer (115)(Column 16, Example 3 and Column 17, Lines 1-67). The resulting sequential series of color filters is features in Figures 4A and 11F for example. (Applicant's "sequentially forming a plurality of color filters neighboring each other on

Art Unit: 2871

a substrate, each color filter having a flat central portion and a peripheral portion wherein the peripheral portion is tapered as advancing from an interface with the flat central portion toward the neighboring color filters”). As broadly interpreted, each color resin pattern has a peripheral portion that touches a black matrix (light intercepting layer 117 formed in conformity with gap between respective units of color pattern layers (Column 19, Lines 18-27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,568,293 (to Takao et al.) and further in view of United States Patent 5,725,975 (to Nakamura et al.).

As to claim 7, Takao does not appear to explicitly specify patterning the color filter material by using a mask having a transparent pattern, a semitransparent pattern and an opaque pattern, wherein the semitransparent pattern is used for forming the peripheral portion of each color filter.

Nakamura teaches a gradation mask and process for the production of the masks of three different regions varying in transparency (please see Figure 5B). In region “c” of Figure 5B, the transmittance of light of a wavelength of 365 nm was 100% while in region “b” transmittance

Art Unit: 2871

was about 10% (Column 6, Lines 30-37). Nakamura also teaches that this gradation mask is very suitable for the manufacturing of color filters comprising a plurality of colored pixels (Column 6, Lines 61-63). The teaching of Nakamura suggests that this type of gradation mask is suitable for the formation of color filters because light of a given wavelength can be transmitted depending on the region or area of the mask (thus a color filter, green, blue, or red could be formed depending on the degree of transparency of a given region) and this mask would be very efficient for the formation of color filters because each color filter could be manufactured at one time without the need for separate masks. Nakamura states that such a gradation mask can be produced “with high accuracy and efficiency and at a low cost (Column 2, Lines 24-29).

Nakamura is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion, and motivation to incorporate such a gradation mask into a process for color filter manufacturing to produce filters efficiently and at low cost.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Takao in view of Nakamura for the formation of color filters such that light of a given wavelength can be transmitted depending on the region or area of the mask (thus a color filter, green, blue, or red could be formed depending on the degree of transparency of a given region) and this mask would be very efficient for the formation of color filters because each color filter could be manufactured at one time without the need for separate masks (high efficiency and low cost).

Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,568,293 (to Takao et al.) and further in view of United States Patent 6,567,150 B1 (to Kim).

As to claim 20, Takao does not appear to explicitly specify the steps of forming a plurality of gate lines on the substrate, forming a plurality of data lines on the substrate, wherein the plurality of gate lines and the plurality of data lines define a plurality of pixel regions, forming a thin film transistor in each pixel region, the thin film transistor comprising a source electrode, a drain electrode and a gate electrode, and forming a pixel electrode in each pixel region, the pixel electrode connected to the drain electrode.

Kim teaches and discloses a liquid crystal display and method for its manufacture wherein a conventional liquid crystal display panel typically includes switching elements and bus lines for generating an electric field for driving the liquid crystal, pixel electrodes formed on a transparent substrate, the pixel electrodes are opposite to the common electrode formed on the color filter panel and which function to generate an electric field applied to the liquid crystal, signal bus lines that run along a column direction of an array of the pixel electrodes, and data bus lines that run along a row direction of the array of pixel electrodes, a thin film transistor (TFT) formed at the corner of the pixel electrodes which applies an electromagnetic field to the pixel electrode, and wherein a gate electrode of the TFT is connected with the signal / gate bus line and a source electrode is connected with the data / source bus line and a drain electrode of the TFT is connected to the pixel electrode (Column 1, Lines 50-67 and Column 2, Lines 1-3).

Art Unit: 2871

Kim is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion, and motivation to include the above elements into a liquid crystal display to apply appropriate electric fields to the display to drive the display.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Takao in view of Kim to apply appropriate electric fields to the display so that one could drive the display.

As to claim 21, it may be presumed that a color filter overlaps a data line (Column 1, Lines 50-67 and Column 2, Lines 1-3).

As to claims 22 and 25, Takao illustrates, at least with reference to Figure 4A, peripheral portions of the color filters overlapping with peripheral portions of other color filters.

As to claim 23, Kim also discloses the steps of forming a black matrix on a substrate and common electrode on the plurality of color filters (Column 1, Lines 50-67 and Column 2, Lines 1-3).

As to claim 24, Takao illustrates each color resin pattern has a peripheral portion that touches a black matrix (light intercepting layer 117 formed in conformity with gap between respective units of color pattern layers (Column 19, Lines 18-27).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

Art Unit: 2871

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent 6,271,902 B1 (to Ogura et al.).

As to claim 6, Ogura has, with reference to Figures 3A-3G, the steps of sequentially forming a first coloring layer (red)(15), a second coloring layer (green)(18), and then a third coloring layer (blue)(20) onto a transparent substrate (1), each coloring layer has a flat central portion that can be readily seen in the figures and portions which taper in a direction approaching a neighboring coloring layer. Furthermore, each peripheral portion of each coloring layer overlaps with a black mask (3)(Applicant's "sequentially forming a plurality of color filters neighboring each other on a substrate, each color filter having a flat central portion and a peripheral portion placed on the black matrix, wherein the peripheral portion is tapered as advancing from an interface with the flat central portion toward the neighboring color filters").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,271,902 B1 (to Ogura et al.) and further in view of United States Patent 5,725,975 (to Nakamura et al.).

As to claim 7, Ogura does not appear to explicitly specify patterning the color filter material by using a mask having a transparent pattern, a semitransparent pattern and an opaque pattern, wherein the semitransparent pattern is used for forming the peripheral portion of each color filter.

Nakamura teaches a gradation mask and process for the production of the masks of three different regions varying in transparency (please see Figure 5B). In region “c” of Figure 5B, the transmittance of light of a wavelength of 365 nm was 100% while in region “b” transmittance was about 10% (Column 6, Lines 30-37). Nakamura also teaches that this gradation mask is very suitable for the manufacturing of color filters comprising a plurality of colored pixels (Column 6, Lines 61-63). The teaching of Nakamura suggests that this type of gradation mask is suitable for the formation of color filters because light of a given wavelength can be transmitted depending on the region or area of the mask (thus a color filter, green, blue, or red could be formed depending on the degree of transparency of a given region) and this mask would be very efficient for the formation of color filters because each color filter could be manufactured at one time without the need for separate masks. Nakamura states that such a gradation mask can be produced “with high accuracy and efficiency and at a low cost (Column 2, Lines 24-29).

Nakamura is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion, and motivation to incorporate such a gradation mask into a process for color filter manufacturing to produce filters efficiently and at low cost.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Ogura in view of Nakamura for the formation of color filters such that light of a given wavelength can be transmitted depending on the region or

Art Unit: 2871

area of the mask (thus a color filter, green, blue, or red could be formed depending on the degree of transparency of a given region) and this mask would be very efficient for the formation of color filters because each color filter could be manufactured at one time without the need for separate masks (high efficiency and low cost).

Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,721,902 B1 (to Ogura et al.) and further in view of United States Patent 6,567,150 B1 (to Kim).

As to claim 20, Ogura does not appear to explicitly specify the steps of forming a plurality of gate lines on the substrate, forming a plurality of data lines on the substrate, wherein the plurality of gate lines and the plurality of data lines define a plurality of pixel regions, forming a thin film transistor in each pixel region, the thin film transistor comprising a source electrode, a drain electrode and a gate electrode, and forming a pixel electrode in each pixel region, the pixel electrode connected to the drain electrode.

Kim teaches and discloses a liquid crystal display and method for its manufacture wherein a conventional liquid crystal display panel typically includes switching elements and bus lines for generating an electric field for driving the liquid crystal, pixel electrodes formed on a transparent substrate, the pixel electrodes are opposite to the common electrode formed on the color filter panel and which function to generate an electric field applied to the liquid crystal, signal bus lines that run along a column direction of an array of the pixel electrodes, and data bus lines that run along a row direction of the array of pixel electrodes, a thin film transistor (TFT) formed at the corner of the pixel electrodes which applies an electromagnetic field to the pixel electrode, and wherein a gate electrode of the TFT is connected with the signal / gate bus line

Art Unit: 2871

and a source electrode is connected with the data / source bus line and a drain electrode of the TFT is connected to the pixel electrode (Column 1, Lines 50-67 and Column 2, Lines 1-3).

Kim is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion, and motivation to include the above elements into a liquid crystal display to apply appropriate electric fields to the display to drive the display.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Ogura in view of Kim to apply appropriate electric fields to the display so that one could drive the display.

As to claim 21, it may be presumed in Kim that a color filter overlaps a data line (Column 1, Lines 50-67 and Column 2, Lines 1-3).

As to claims 22 and 25, Ogura illustrates, at least with reference to Figure 4, peripheral portions of the color filters overlapping with peripheral portions of other color filters.

As to claim 23, Kim also discloses the steps of forming a black matrix on a substrate and common electrode on the plurality of color filters (Column 1, Lines 50-67 and Column 2, Lines 1-3).

As to claim 24, Ogura illustrates each color resin pattern has a peripheral portion that touches a black matrix (Figure 4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

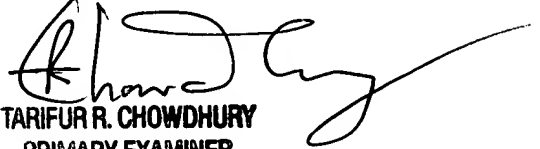
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio

Robert Kim, SPE

Patent Examiner
Art Unit 2871


TARIFUR R. CHOWDHURY
PRIMARY EXAMINER